

1     CLAIMS:

2             1.     A wireless communication system comprising:

3             at least one remote communication device configured to  
4     communicate a return link wireless signal;

5             an interrogator including:

6             a communication station configured to receive the return link  
7     wireless signal and to generate a return link communication signal  
8     corresponding to the return link wireless signal;

9             communication circuitry coupled with the communication  
10    station and configured to communicate the return link communication  
11    signal; and

12            a housing remotely located with respect to the  
13    communication station and including circuitry configured to receive the  
14    return link communication signal from the communication circuitry and  
15    to process the return link communication signal.

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17            2.     The wireless communication system according to claim 1  
18    wherein the communication station includes a low noise amplifier  
19    configured to increase the power of the return link communication  
20    signal.

1           3.    The wireless communication system according to claim 1  
2    wherein the housing includes adjustment circuitry configured to receive  
3    the return link communication signal from the communication circuitry  
4    and to adjust an electrical characteristic of the return link  
5    communication signal.

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7           4.    The wireless communication system according to claim 3  
8    wherein the adjustment circuitry is configured to output the return link  
9    communication signal at a substantially constant level.

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11          5.    The wireless communication system according to claim 3  
12    wherein the adjustment circuitry includes automatic gain control circuitry.

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14          6.    The wireless communication system according to claim 5  
15    wherein the automatic gain control circuitry is configured to monitor the  
16    power of the return link communication signal and to adjust the power  
17    of the return link communication signal responsive to the monitoring.

18  
19          7.    The wireless communication system according to claim 1  
20    wherein the communication circuitry includes a coaxial RF cable.

1           8.    The wireless communication system according to claim 1  
2 wherein the communication circuitry includes a plurality of wireless  
3 transceivers individually coupled with one of the housing and the  
4 communication station.

5  
6           9.    The wireless communication system according to claim 1  
7 wherein the remote communication device comprises a radio frequency  
8 identification device.

9  
10          10.   An interrogator of a wireless communication system  
11 comprising:

12           a communication station configured to receive a return link  
13 wireless signal and to generate a return link communication signal  
14 corresponding to the return link wireless signal;

15           communication circuitry coupled with the communication station  
16 and configured to communicate the return link communication signal;  
17 and

18           a housing remotely located with respect to the communication  
19 station and including circuitry configured to receive the return link  
20 communication signal from the communication circuitry and to process  
21 the return link communication signal.

1 11. The interrogator according to claim 10 wherein the  
2 communication station includes a low noise amplifier configured to  
3 increase the power of the return link communication signal.

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5 12. The interrogator according to claim 10 wherein the housing  
6 includes adjustment circuitry configured to receive the return link  
7 communication signal from the communication circuitry and to adjust an  
8 electrical characteristic of the return link communication signal.

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10 13. The interrogator according to claim 12 wherein the  
11 adjustment circuitry is configured to output the return link  
12 communication signal at a substantially constant level.

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14 14. The interrogator according to claim 12 wherein the  
15 adjustment circuitry includes automatic gain control circuitry.

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17 15. The interrogator according to claim 14 wherein the  
18 automatic gain control circuitry is configured to monitor the power of  
19 the return link communication signal and to adjust the power of the  
20 return link communication signal responsive to the monitoring.

21  
22 16. The interrogator according to claim 10 wherein the  
23 communication circuitry includes a coaxial RF cable.  
24

1 17. The interrogator according to claim 10 wherein the  
2 communication circuitry includes a plurality of wireless transceivers  
3 individually coupled with one of the housing and the communication  
4 station.

5  
6 18. An interrogator of a wireless communication system  
7 comprising:

8 a plurality of communication stations individually configured to  
9 receive return link wireless signals and to generate return link  
10 communication signals corresponding to the return link wireless signals;  
11 and

12 a housing remotely located with respect to at least one of the  
13 communication stations and including circuitry configured to receive the  
14 return link communication signals from the communication stations and  
15 to process the return link communication signals.

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17 19. The interrogator according to claim 18 wherein the housing  
18 includes adjustment circuitry configured to adjust at least one electrical  
19 characteristic of the return link communication signals.

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21 20. The interrogator according to claim 19 wherein the  
22 adjustment circuitry includes automatic gain control circuitry.  
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1           21. The interrogator according to claim 18 further comprising a  
2 plurality of communication circuits configured to communicate the return  
3 link communication signals intermediate respective communication stations  
4 and the housing.

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6           22. The interrogator according to claim 18 wherein the  
7 communication stations are individually positioned to receive return link  
8 wireless signals within one of a plurality of communication ranges.  
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1           23. An interrogator of a radio frequency identification system  
2 comprising:

3           a communication station including:

4               an antenna configured to receive a return link wireless  
5 signal and to output a return link communication signal corresponding  
6 to the return link wireless signal; and

7               a low noise amplifier coupled with the antenna and  
8 configured to increase the power of the return link communication  
9 signal;

10              a coaxial RF cable coupled with the low noise amplifier of the  
11 communication station and configured to communicate the return link  
12 communication signal; and

13              a housing remotely located with respect to the communication  
14 station and including:

15                  automatic gain control circuitry coupled with the coaxial RF  
16 cable and configured to adjust at least one electrical characteristic of  
17 the return link communication signal to output the return link  
18 communication signal at a substantially constant level; and

19                  processing circuitry configured to receive the return link  
20 communication signal from the automatic gain control circuitry and to  
21 process the return link communication signal.  
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1 24. A method of communicating within a wireless communication  
2 system comprising:

3 providing an interrogator and at least one remote communication  
4 device;

5 communicating a return link wireless signal using the remote  
6 communication device;

7 receiving the return link wireless signal within a communication  
8 station of the interrogator;

9 generating a return link communication signal within the  
10 communication station corresponding to the return link wireless signal;

11 communicating the return link communication signal from the  
12 communication station using communication circuitry; and

13 receiving the return link communication signal from the  
14 communication circuitry within a housing of the interrogator remotely  
15 located from the communication station.

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17 25. The method according to claim 24 further comprising  
18 amplifying the return link communication signal before the  
19 communicating the return link communication signal.

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21 26. The method according to claim 24 further comprising  
22 adjusting at least one characteristic of the return link communication  
23 signal after the receiving the return link communication signal.



1           27. The method according to claim 26 wherein the adjusting  
2 provides a return link communication signal having a substantially  
3 constant level.

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5           28. The method according to claim 26 wherein the adjusting  
6 comprises adjusting using automatic gain control circuitry.

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8           29. The method according to claim 24 wherein the providing at  
9 least one remote communication device comprises providing a radio  
10 frequency identification device.

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12           30. The method according to claim 24 further comprising  
13 processing the return link communication signal after the receiving the  
14 return link communication signal.

1           31. A method of communicating within a wireless communication  
2 system comprising:

3           providing an interrogator having a housing and at least one  
4 communication station remotely located from housing;

5           receiving a return link wireless signal within the communication  
6 station of the interrogator;

7           generating a return link communication signal within the  
8 communication station corresponding to the return link wireless signal;

9           communicating the return link communication signal from the  
10 communication station using communication circuitry; and

11          receiving the return link communication signal within the housing  
12 from the communication circuitry.

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14          32. The method according to claim 31 further comprising  
15 amplifying the return link communication signal before the  
16 communicating the return link communication signal.

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18          33. The method according to claim 31 further comprising  
19 adjusting at least one characteristic of the return link communication  
20 signal after the receiving the return link communication signal.

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22          34. The method according to claim 33 wherein the adjusting  
23 provides a return link communication signal having a substantially  
24 constant level.

1           35. The method according to claim 33 wherein the adjusting  
2 comprises adjusting using automatic gain control circuitry.

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4           36. The method according to claim 31 wherein the providing  
5 comprises providing a plurality of communication stations remotely  
6 located from the housing, and the communication stations individually  
7 receive return link wireless signals within one of a plurality of  
8 communication ranges.

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10          37. The method according to claim 31 further comprising  
11 processing the return link communication signal after the receiving the  
12 return link communication signal.